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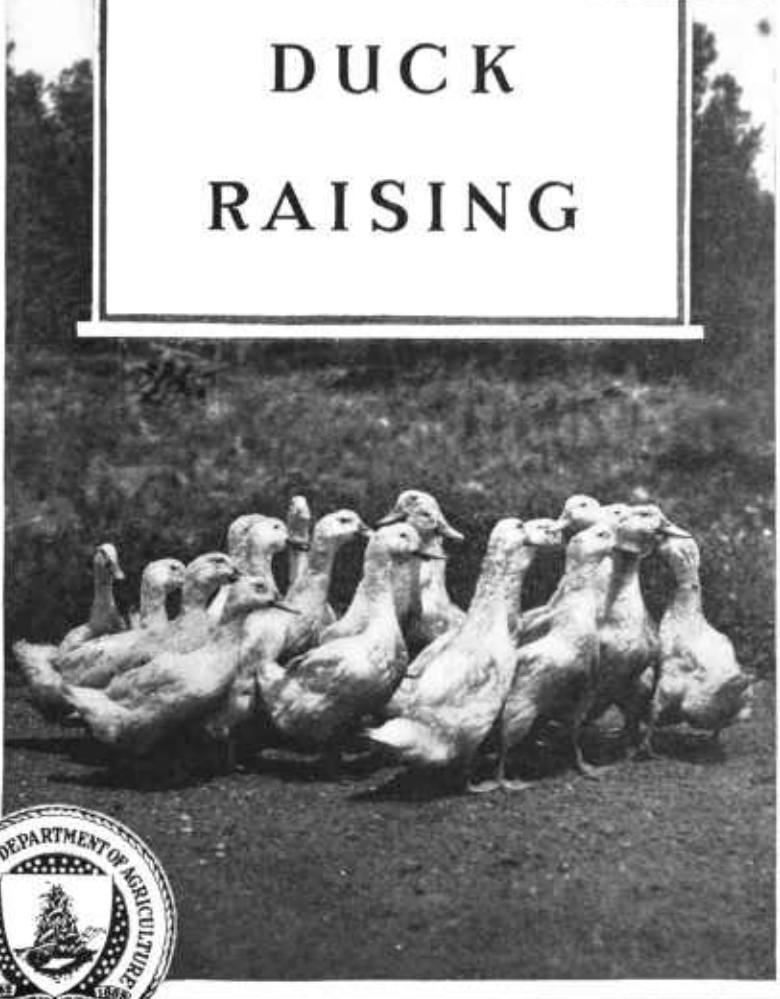
DUCK RAISING



DUCK RAISING is conducted successfully both as a side issue on general farms and as a special business on a large scale.

The Pekin is the most popular breed for the production of meat, and the Indian Runner is the most popular breed for the production of market eggs.

The rearing of ducks for market on a large scale requires extensive capital and experience. Young ducks forced for rapid growth and marketed at from 8 to 12 weeks of age are called "green" ducks. They weigh from $4\frac{1}{2}$ to 6 pounds each and are the principal source of income on commercial duck farms.

Practically all the large duck farms are situated on streams of running water, and this water aids greatly in successful duck farming.

The demand for market ducks and ducks' eggs at good prices is usually limited to the large cities, and is not nearly so general as the demand for chickens or for hens' eggs.

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DUCK RAISING.

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CONTENTS.

NUMBERS OF DUCKS IN UNITED STATES.

ACCORDING TO THE CENSUS of 1920 there were 2,817,624 ducks in the United States on January 1 of that year, valued at $3,373,966. This shows a slight decrease in numbers from the census of 1910, indicating that the production of ducks in the country as a whole is barely holding its own. The decrease occurred in the Southern States, but several of the States in which ducks are raised on special duck farms showed an increase in the number of ducks kept. Massachusetts, California, and Colorado showed an increase of about 5 per cent. New York, which contains by far the greatest number of duck farms, showed no change in the number of ducks, but as the number raised on commercial farms has undoubtedly increased materially in the last 10 years a decrease in the number of ducks on general farms must have occurred to offset this increase on duck farms. There are about the same number of ducks as geese in this country, and only about three-fourths as many ducks as turkeys. Ducks are most numerous in the following States, arranged according to their production: Iowa, Illinois, Pennsylvania, New York, Missouri, Minnesota, Tennessee, Ohio, South Dakota, Indiana, and Nebraska, the number ranging from about 235,000 head in Iowa to 100,000 in Nebraska.

BREEDS OF DUCKS.

There are 11 standard breeds of ducks which have been admitted to the American Standard of Perfection. These breeds may be divided into three classes: (1) The meat class, including the Pekin, Aylesbury, Muscovy, Rouen, Cayuga, Buff, and Swedish; (2) the egg class, represented by the Indian Runner; and (3) the ornamental class, composed of the Call, the Crested White, and the Black East India. The ducks commonly kept on many farms in the South and the Middle West are of mixed breeding, and are generally of small size,

poor layers, and undesirable types of market duck. Except the Muscovy, all our economic breeds of ducks are said to have originated from the Mallard or wild duck.

THE MEAT CLASS.

THE PEKIN DUCK.

This breed is kept almost exclusively by commercial duck farmers in the United States who make a specialty of producing "green" ducks; it is also the most popular breed on general farms. Green ducks are ducklings which are grown rapidly and marketed when

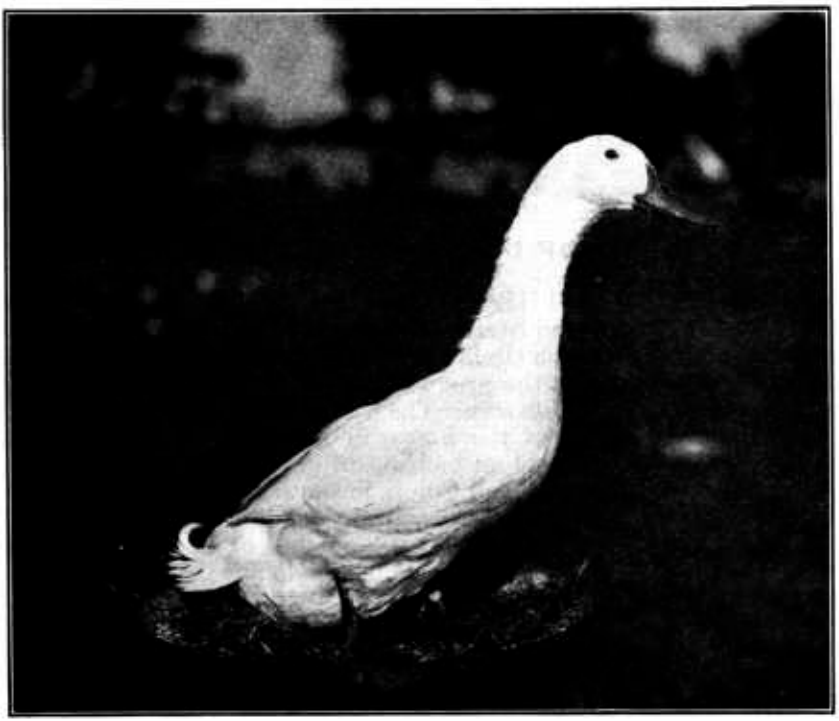

FIG. 1.—Pekin drake.

they are from 8 to 12 weeks old, when they weigh about 4½ to 6 pounds apiece. If not sold at that time the market quality of their flesh depreciates, while their weight decreases, and it takes several weeks to get them back into good market condition.

The Pekin duck (fig. 1) originated in China and was introduced into this country about 1875, where it soon became the most popular breed on commercial duck farms. The introduction of the Pekin practically marks the beginning of intensive commercial duck farming in the United States. This breed has a creamy-white plumage, a long, broad, and deep body, with a full breast and deep keel (the part extending backward from the breast). The color of the skin is yellow, the shanks and toes should be reddish-orange, and the bill orange-yellow, free from black. The standard weights of the adult

drake and duck are 9 and 8 pounds, respectively. Pekin ducks are hardy, are fair layers, practically nonsitters, and especially adapted for the production of flesh. They are very docile, easily confined by low fences, and well adapted either for commercial duck farming or as a side issue on general farms.

THE AYLESBURY DUCK.

The Aylesbury duck (fig. 2) is a native of England, in which country it is more popular than the Pekin. It is a large, white duck having the same standard weights and general shape as the Pekin. This breed resembles the Pekin in many ways, but has never become popular in this country, although it has been tried on some of the

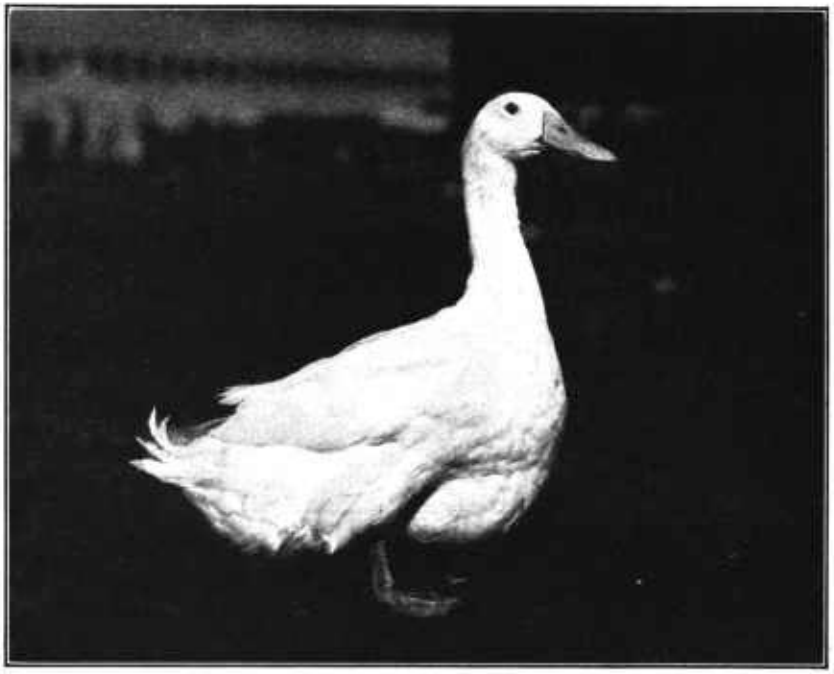

FIG. 2.—Aylesbury drake.

larger duck farms. The Aylesbury appears to have the same qualities which make the Pekin our most popular market duck, and could be kept with success on either commercial duck farms or general farms. It has a pure white plumage, while the Pekin is creamy white in color.

THE MUSCOVY DUCK.

There are two standard varieties of Muscovy ducks, the white and the colored. This breed originated in South America and is considered by some writers to be of a different species from our other ducks, although in some cases it may be crossed with our domestic varieties of ducks, producing hybrids which are sometimes fertile. The head and face of the Muscovy (fig. 3) are partly bare, with red, rough, carunculated skin. It has a long, broad body, with greater

breadth but less depth and less keel development than the Pekin. The drake should be at least one-third larger than the duck, as the standard weight of the adult drake is 10 pounds and that of the duck 7 pounds. The white variety has a pure white plumage, pale orange or yellow legs, and a pinkish, flesh-colored beak. The breast, body, and back of the colored Muscovy are a lustrous blue-black, broken with some white. The wing coverts are also a lustrous blue-black with splashes of white, and the tail is black. The bill is pink, shaded with horn, and the legs may be yellow or a dark, leaden color.

Muscovy ducks are not well adapted for commercial duck farming, as they are poor layers, and they are not well suited for marketing because of the difference in size between the duck and the drake. Moreover, they are good fliers and can readily fly over ordinary

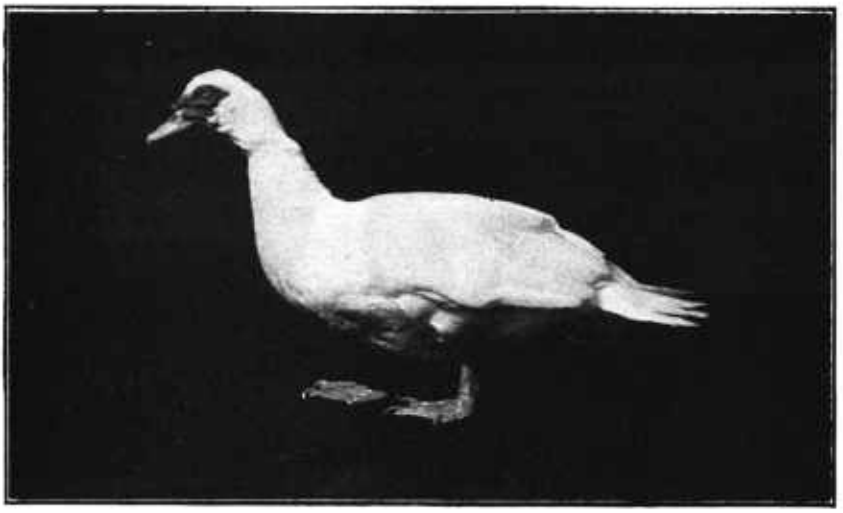

FIG. 3.—White Muscovy drake.

poultry fences. However, the breed is a wide forager, requires very little care, is not so noisy as the Pekin, and can be kept with fair success on general farms.

THE ROUEN DUCK.

The Rouen duck (fig. 4) derives its name from the city of Rouen, in northern France, and was probably derived from a similar type of common or native duck by selection. In shape and type this breed is quite similar to the Pekin and has the same size and standard weights. The eyes are dark brown and the head and upper part of the neck of the male are green, with a white ring around the neck, while the back is gray mixed with green near the neck, shading into a lustrous green near the tail. The lower part of the body is gray and the breast is claret colored. The tail and wings are gray and brown mixed with some green, while the wings have a wide purple bar with narrow white bars on either side of the purple, which are exposed when the wing is folded. The shanks and toes are an orange or orange-brown color. The duck is barred on the wings similarly to the drake, but the color of the plumage of her body is brown with

penciling in all sections. This breed has very handsome markings, but does not make so desirable a market duck as the Pekin or Aylesbury, as it does not mature so quickly, besides having dark-colored pin feathers, and it is not so good a layer. It is not adapted for commercial duck farming, but may be kept successfully by the fancier or on general farms.

THE CAYUGA DUCK.

The Cayuga duck derives its name from Cayuga County, N. Y., where it probably was developed about 1850. It resembles the Pekin in shape, but the standard weight is 1 pound lighter. The Cayuga is said to be a good market duck, but is not widely distributed, and

FIG. 4.—Rouen duck.

it is not so good a market duck as the Pekin because of its dark plumage. The Cayuga duck is a fair layer and may be raised with success on general farms. The plumage is a greenish black in all sections of the body, except that the drake may have brown flight feathers; the eyes are dark brown, and the shanks and toes are a black or dark slate color.

THE BUFF DUCK.

The Buff duck originated in England and has been in the American Standard of Perfection for only a few years. It is said to have been produced by crossing the Runner, Aylesbury, and Rouen, and is intermediate in type between the Pekin and the Rouen. The standard weights are 1 pound lighter in each class than the Pekin. It has been developed for the production of eggs and is said to be a good

producer, and also makes a fair market or table duck. This breed would appear to be a good one to keep on general farms for both eggs and meat production. This breed has good length of body, which is broad, deep, and well rounded. The plumage is an even shade of rich fawn buff, except the head and the upper portion of the neck in the drake, which should be seal brown.

THE BLUE SWEDISH DUCK.

The Blue Swedish duck probably originated in Germany, although blue ducks are found in several European countries. This breed resembles the Pekin in type, but is smaller, with the same standard weights as the Cayuga, except that both the young drake and the young duck are one-half pound lighter than in that breed. The plumage of the Blue Swedish is blue in all sections, except that it has a white bib on the neck and the two main flight feathers are pure white. This breed is not widely distributed in this country and is not so well adapted for commercial purposes as a white duck; it should, however, be a successful variety for the general farm.

FIG. 5.—Penciled Runner drake.

THE EGG-LAYING CLASS.

THE INDIAN RUNNER DUCK.

Writers disagree as to the place of origin of the Indian Runner or Runner duck, some claiming that it originated in East India, while others assert that it is a selected type of a duck which is common in Holland, Belgium, and France. There are three standard varieties of Indian Runner ducks—the Fawn and White, the White, and the Penciled. The Fawn and White is fawn or gray and white, with a white neck and a line of white running up to the eyes and extending around the bill. The back and shoulders are fawn, and upper part of the breast and wings are fawn, but the lower part is white. The breast is full; the body is long and narrow and carried erect, with no indication of a keel, the body somewhat resembling that of a penguin in shape. The shanks and toes are orange red and

the bill of the young drake is yellow, later becoming greenish yellow, while a young duck has a yellow bill spotted with green, which later becomes a dull green.

The plumage of the White variety (fig. 6) is pure white in all sections. The bill is yellow and the shanks and toes are orange. The color of the Penciled variety (fig. 5) resembles that of the Fawn and White except that the head of the male is a dull bronze green and white and the back has a soft fawn ground, finely stippled with a darker shade of fawn. The upper section of the breast is dark fawn, the body a medium fawn, and the tail a dull bronze green. The head of the female is a medium fawn and white, while the white markings in the plumage resemble those of the male. The colored markings are a medium fawn throughout, with a light line of fawn color running around the edge of each feather, the border being a darker shade.

FIG. 6.—White Runner drake.

The Indian Runner duck is much smaller than breeds of the meat type, the drake having a standard weight of 4½ pounds and the duck 4 pounds. During the recent few years the merits of this breed have been advertised extensively and the number of Indian Runner ducks has increased. They are considered the best layers of all our standard breeds of ducks, and hold the same relative position in the duck family that the Leghorn does among the breeds of domestic fowl. This breed is frequently said to be a higher egg producer than the White Leghorn, but this does not appear to be well established. It lays a good-sized white egg considerably larger than a hen's egg, and is said to be a small eater. Indian Runner ducks are active, are good foragers, nonsitters, and hardy. Their skin is yellow and they make good broilers, weighing from 2½ to 3 pounds apiece at about 6 weeks of age. They are not so well adapted for the production of large green ducks as the Pekin, but may be kept to advantage on duck farms to produce ducklings of broiler size.

The Indian Runner is a good breed for the general farmer and is one of the best for duck farms devoted primarily to the production of market eggs. The keeping of ducks for the production of eggs for market appears to be growing more rapidly in the South than in the East or Middle West. The business of the production of duck eggs for market is discussed in the latter part of this bulletin, under "Marketing ducks' eggs."

THE ORNAMENTAL CLASS.

THE CALL DUCKS.

There are two varieties of Call ducks, the Gray and the White. They are the bantams of the duck family, are kept for exhibition or for fancy purposes, and used as decoys in wild-duck shooting. This breed is said to be especially good for decoys when crossed with the wild Mallard or with the common duck. The Gray Call has the color markings of the Rouen and closely resembles the wild Mallard. The plumage of the White Call is pure white. Ducks of this breed have no standard weights, but are bred and selected for small size.

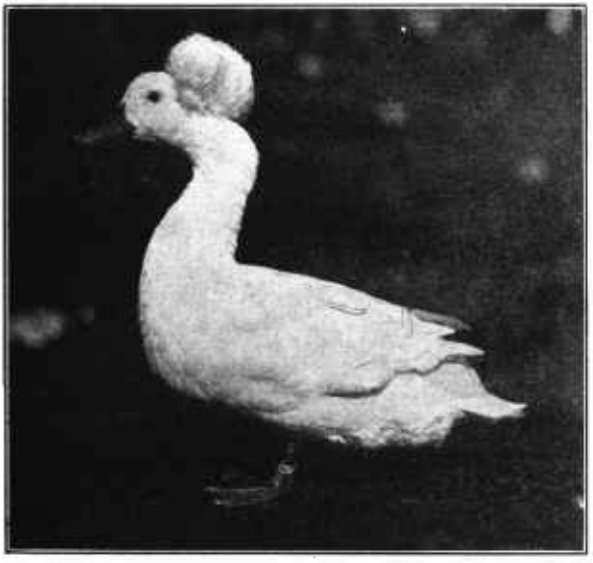

FIG. 7.—Crested White drake.

THE CRESTED WHITE DUCK.

This is a white ornamental duck of medium size and has a crest. The standard weights are a pound less than those of the Cayuga duck (see fig. 7).

THE BLACK EAST INDIA DUCK.

The Black East India duck is of practically the same size and type as the Call ducks and is kept entirely for ornamental purposes. The plumage is a deep black, with a brilliant greenish tint. This duck is very shy and does not breed well in confinement. Both the Crested White and the Black East India duck are rare in this country.

THE MANDARIN AND WOOD DUCKS.

The Mandarin and Wood, or Carolina, ducks, which are the most ornamental of the small breeds of waterfowl, are not included in

the American Standard of Perfection. The plumage of these breeds is handsomely marked and contains several brilliant colors. Both varieties are commonly kept in parks and zoological gardens with other ornamental waterfowl.

DUCK FARMING.

Duck raising on a large scale has been developed as a special business to a considerable extent on Long Island (see fig. 8) and in sections within easy shipping distance of New York City, Boston, and Philadelphia. Intensive duck farming on a large scale has been more successful than intensive chicken raising, as Pekin ducks, especially, stand confinement well, are more easily brooded, and are less subject to disease than chickens. Artificial methods of hatching and rearing and labor-saving machinery have been used very successfully on duck farms.

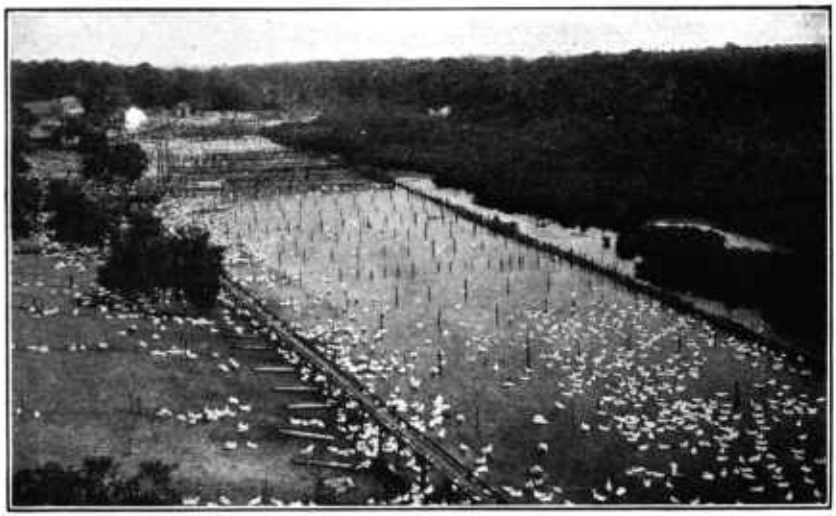

FIG. 8.—Large duck farm on Long Island.

The demand for table ducks at good prices is mostly limited to a few large cities and is not nearly so general as the demand for chickens or fowls. The demand, however, appears to be gradually increasing, but this lack of wide market materially influences the establishment and growth of duck farms. The market conditions should be studied carefully before making a large investment in ducks. A prejudice against duck flesh and eggs exists in many places, caused probably by eating the common duck, which has been allowed to roam in places where filthy conditions exist. The rearing of ducks for market on a large scale is a business requiring capital and extensive experience. Practical experience on a large duck plant is the best teacher, but the novice can begin in a small way and enlarge as experience justifies.

Ducks can be raised with success and at a profit on general farms, but do not appear to be so well adapted as a source of income to average farm conditions as fowls, although they serve to add variety

of both meat and eggs for the farmer's table. If the demand for ducks, and especially for duck eggs, increases, breeds of ducks which are good layers should be profitable on farms, particularly where there is good pasture land with running water. Farmers rarely give the necessary care to their ducklings in either feeding or marketing to be able to cater to the trade in fancy green ducks.

LOCATION AND ARRANGEMENT.

The most desirable location for a duck farm is on a light, sandy soil with a gentle southern slope, leading to a stream, as shown in figure 9, so that the duck pens for the breeders can be extended 50 feet or more into running water, as the fertility of duck eggs is better, as a rule, where the ducks have access to the water. The

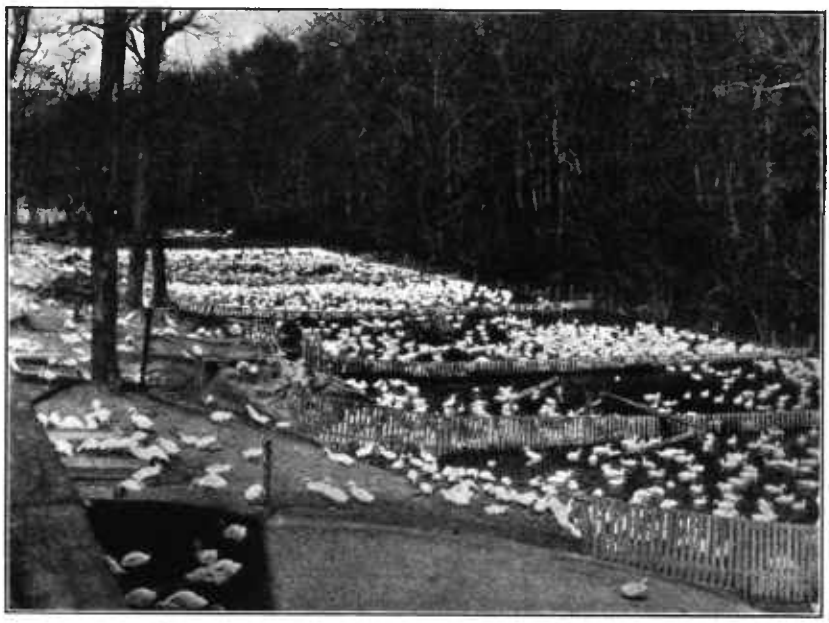

FIG. 9.—Duck yards extending into water.

farm should have good shipping facilities to aid both in shipping products and in securing supplies. The arrangement of the buildings should be planned to economize labor and allow for increase of the equipment. The incubator cellar should be convenient to the brooder house, the brooder house to the growing house, with the fattening pens next, which should lead to the killing house. The pens in the houses, the outside yards, and the arrangement of the buildings should be planned so that the ducks may be easily driven from house to house. The feed room or house should be centrally located. Considerable machinery for mixing feed is kept on all large duck farms and most of these farms have tracks for feed trucks to facilitate the moving of feed to the different houses and yards. These trucks are pushed by hand. Convenient watering arrangements are essential where large numbers of ducks are kept, as they require a large amount of drinking water. Plenty of shade should be pro-

vided for all the ducks. While ducks may be kept successfully under very intensive conditions, it is advisable to allow considerable yard space. Double yards, which may be rotated and planted to quick-growing crops, such as oats, wheat, and rye, are good for intensive duck farms.

Most of the Long Island duck farms have sandy yards, which are cleansed by the rise and fall of the tide. All duck yards should be made on gently sloping land. The yards must be kept clean, which may require scraping off the top surface in some yards. Sufficient land should be available to grow green feed and to utilize the manure produced. It is advisable to have a pond or stream for the breeding ducks, as the eggs usually show greater fertility under these conditions, although on a few successful duck farms the ducks are kept on dry land. Ducks for market should also be allowed to go into the stream after they are 6 weeks old, as it saves much labor in watering

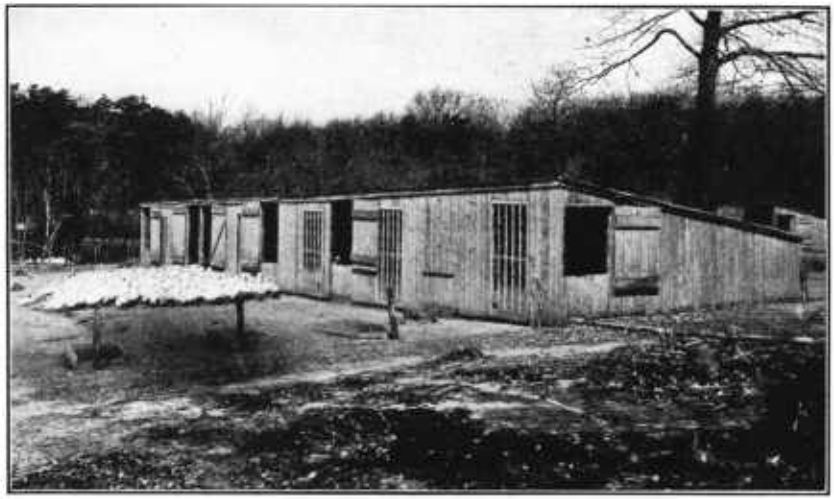

FIG. 10.—Flock of breeding ducks and breeding house.

and greatly improves their feathers for market. Ducklings under 6 weeks should not be allowed to go into water.

HOUSES.

The site of the poultry house must be dry, well drained, and raised above the general level. A light, porous soil makes the best location. Ventilation is of vital importance, as the comfort and health of the ducks depend upon an abundant supply of pure, dry air. Three types of houses are necessary on duck farms. Fairly open houses for the breeding ducks, simple open fattening pens or houses for the green ducks for market, and brooder houses for the baby ducklings, three different brooder houses usually being required. A shed-roof breeding house, 20 feet deep and 40 feet long, 7 feet high in front and 4 feet in the rear, makes a good, warm house, accommodating about 200 breeders, as it is best to allow approximately 4 to 5 square feet of floor space for each breeding duck (see fig. 10). About half

of the front of the building should be composed of glass windows and space for muslin curtains in equal proportion. A glass window on the east and one on the west end help to ventilate and dry out the house during the mild days. The walls may be made of matched lumber, or barn boards 12 inches wide, with the cracks covered with battens 3 inches wide may be used. Rough lumber covered with weatherproof paper is also suitable. The roof should be water-tight. A dirt floor raised 4 to 6 inches above the ground level is satisfactory on light, well-drained soil. Board floors, raised 6 to 8 inches above the ground and covered with 4 inches of sand or dry earth may be used.

The breeding ducks should be bedded down with straw whenever the floor gets damp. During the day, except in stormy and cold weather, all the windows should be opened wide to allow the bedding

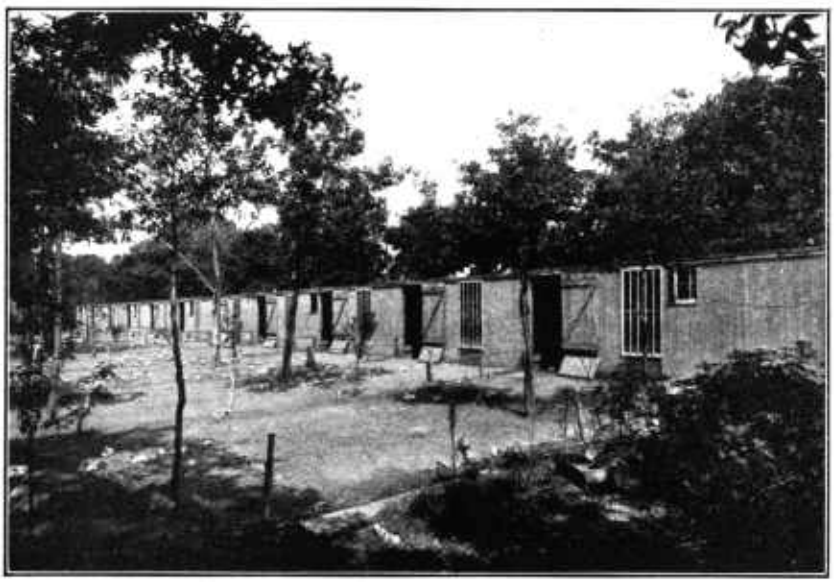

FIG. 11.—Brooder house for raising young ducks on a large scale.

to dry. The nests are made like stalls, 12 inches wide, 18 inches deep, using boards about 12 inches high to separate the nests. These 12-inch partition boards are nailed to a strip about 5 inches high which forms the front of the nest, making a row of nests when placed against the back or side of a building. A yard 100 feet wide and 200 feet long is sufficient for 200 breeding ducks. It should be extended 50 feet into the stream if possible. Poultry wire about 2 feet high will keep the ducks confined in their respective yards.

BROODER HOUSES.

Where ducks are raised on a large scale, hot-water pipe systems are installed in a regular long brooder house, as shown in figure 11. The house should face the south unless it is a double brooder house with windows on both sides, and in that case the building should face

east and west. There should be a large glass window for each pen in the brooder, as plenty of light is desirable. A shed-roof house, about 16 feet deep, 6½ feet high in front, 5 feet in the rear, and as long as desired, makes a good building for a single brooder house.

A double brooder house should have a gable roof with sides about 5 feet high and ridge 8 feet high. The hot-water heating pipes run through the center of the building, four on each side of the dividing-pen partition which runs through the center of the house. Over these pipes is a platform under which the ducks hover and which is also used by the attendant as a walk. No cloth cover is used in front of the pipes except in severe weather, when a burlap bag may be hung there. This double house is 20 feet wide, and each pen is divided into sections 4 feet wide and 10 feet long, including run under pipe, which

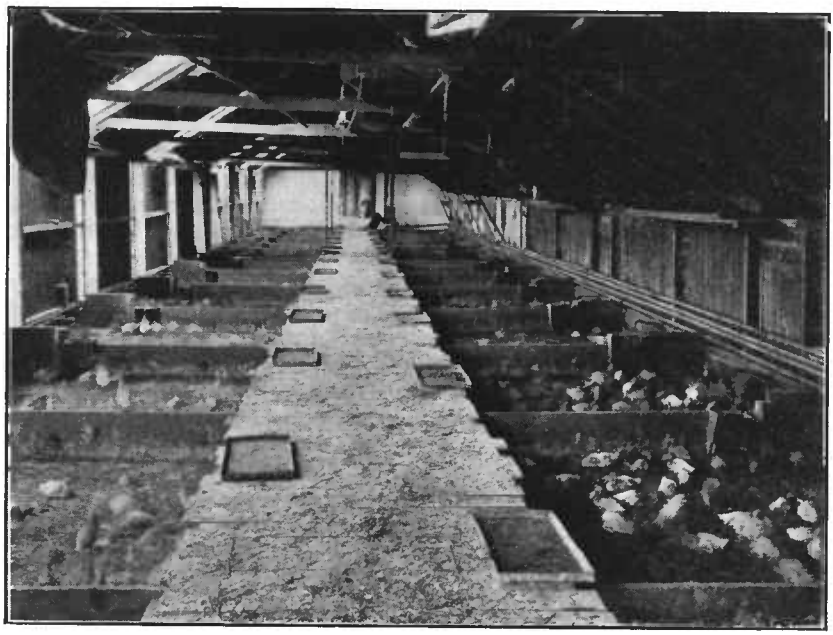

FIG. 12.—Interior of duck brooder house, showing feeding pans in center. Hot-water pipes and hover are in the center of house, under board walk.

will take care of 100 baby ducklings. Each partition should be about 1 foot high and arranged so that part of the partition in each pen can be removed in order to drive ducks from one pen to the other, as the heating pipes are nearer the floor in one end of the house and gradually rise toward the further end of the building in order to take care of the different ages of the ducklings. The smallest ducklings are kept where the pipes are nearest to the floor, or about 3 inches above their heads, and as they grow they are moved to pens where the pipes are higher, as less heat is needed as they develop.

A second gable-roof brooder house is used with pipes placed much higher from the floor of the pen in order to accustom the ducks to less heat before they are transferred to a cold brooder. These pens in the second brooder are about 10 by 15 feet, accommodating about 200 ducklings when 3 or 4 weeks old. The third or cold brooder is not

heated, and is a shed-roof house about 18 feet deep, 4 feet in the rear, and 6½ feet in front. Good judgment must be used when transferring ducklings from a second heated brooder house to a cold brooder house, as early hatched ducklings require heat much longer than late-hatched ducklings. The ducklings are transferred from the cold brooder to the fattening pens along the water front when the feathers are partly grown on their backs, as after that age they do not require shelter, except shade from the hot sun. Wire fencing 1½ feet high is sufficient to yard brooder-house ducklings, while a 2-foot fence will confine the older birds.

SELECTING AND MATING.

The breeders selected should have a broad breast, a deep keel, broad back, and medium or large head and neck. The drake is usually coarser and more masculine in appearance than the duck and has a distinct curl in his tail feathers. The selection of vigorous breeding ducks is very essential to successful duck farming. They are selected about July 1 from the young ducks that are almost ready for market at that time. They are kept only during their first laying season and are then marketed. Older ducks do not lay eggs enough during the early part of the winter to produce sufficient quantities of market ducks, but it may pay to keep a few out of which to get the breeding stock.

Artificial lights are used to some extent to increase the egg production in the winter. In handling ducks pick them up by their necks rather than by the legs, as the latter are apt to break easily. Ducks lay their eggs early in the morning and should be confined to the house or pen until 9.30 or 10 a. m. If allowed to roam early in the morning, they may lay in a pond or stream and the eggs may be lost. The average White Pekin duck lays about 100 eggs each season. During the cold weather 5 ducks may be mated to 1 drake, about April 1, 6 to 1 is sufficient, and later, about June 1, 7 or 8 ducks to 1 drake. On the large duck farms ducks are often mated in pens of 200 birds or more with good results. (Fig. 13.)

INCUBATION.

The period of incubation for ducks' eggs is 28 days, except for the Muscovy duck, which is 33 to 35 days. The eggs may be hatched either naturally or artificially, but on practically all the large duck farms the hatching is done in incubators. Incubators should be operated in a well-ventilated room or cellar, which is about two-thirds below the ground level, so that the temperature remains fairly even. The cellar should be from 7½ to 8½ feet high, with plenty of windows above the ground level for light and ventilation. Mammoth hot-water incubators, heated by coal, with automatic devices for turning the eggs are used on almost all the duck farms. Strong, fertile eggs are a prime essential to good hatching and are obtained only from stock properly mated and kept under the best possible conditions for health and vigor.

Pekin and Indian Runner ducks rarely sit; consequently, if natural methods of incubation are to be used, the eggs are usually hatched under hens. Ducks' eggs should be washed if dirty, as it does not

appear to injure their hatching qualities. Hens must be well cared for in hatching ducks' eggs, as the period of incubation is a week longer than that of hens' eggs. It usually takes ducklings from 24 to 48 hours to hatch after they pick the shells; therefore it is advisable to allow the hen to get off the nest for feed and water when the first ducklings pick the shell and then confine her to the nest until the hatching is over. Ducks' eggs need more moisture than hens' eggs at hatching time, as it takes the ducks much longer to get out of the shell. The eggs, therefore, should be sprinkled with warm water just before the eggs are ready to pip.

The incubators should be perfectly level and should be operated for a few days before the eggs are put in. The thermometer should be arranged so that the bulb just clears the top of the egg; with the

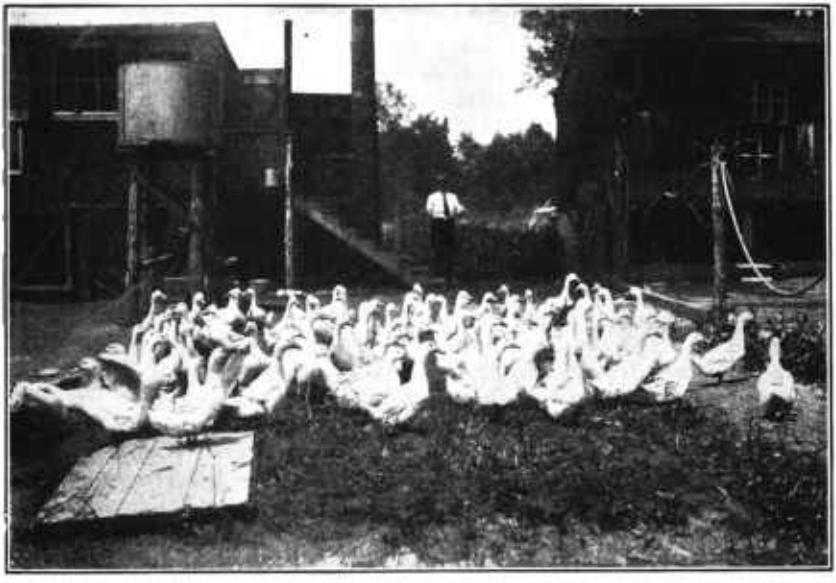

FIG. 13.—Breeding flock of Pekin ducks.

bulb in this position the temperature should be run at 102½° F. for the first week, 103° from then until time of hatching, when it should be allowed to reach 104°.

Incubators planned for hatching duck eggs may be obtained from the incubator companies, but when only a few eggs are to be hatched the regular hen-egg machine may be used. In operating the incubator turn the eggs twice a day from the third to the twenty-fifth day, inclusive, reversing the trays each time the eggs are turned. If the incubator has an automatic turning device, it pays to turn the eggs three times daily, cooling the eggs from the tenth to the twenty-fourth day, inclusive. The length of time to cool eggs depends upon the temperature of the incubator room and the day of incubation, but a good general rule is to leave the eggs out of the incubator until they feel slightly cool to the hand, face, or eyelid.

It is usually advisable to supply moisture for duck eggs after the tenth day of incubation, but this depends upon the make of the

incubator, on the climate, and especially on the humidity of the place where the incubator is operated. Many methods are used to supply moisture in incubation, such as sprinkling the eggs with warm water heated to about 100° F., or placing a pan of water, a receptacle containing moist sand, or a wet sponge below the egg tray. Another common method of supplying moisture is to sprinkle or soak the floor of the incubator room or to place a pail of warm water under the lamp.

Eggs which have become overheated can be cooled quickly by sprinkling with cold water. Shut the incubator tightly when the ducks begin to pip, closing the ventilators and not opening the machine at all until the hatching is over. If the tray is too crowded with ducklings, ventilators may be opened when the hatch is two-thirds off, but the doors should not be opened under any circumstances. When all the ducklings are hatched, remove the egg tray, open the ventilators, and keep the incubator door open slightly. Allow the ducklings to remain in the incubator from 24 to 36 hours at a temperature of 90° F. without feeding. In taking the ducklings to the brooder house, keep them well covered to guard against chilling.

TESTING EGGS.

All eggs should be tested at least twice during incubation, preferably on the seventh and twenty-first days, and the infertile eggs and those with dead germs removed. Dead germs in duck eggs decompose very rapidly and are often detected by their odor. Such eggs should be removed from the incubator. Infertile eggs, when boiled hard, make good feed for ducklings. Infertile eggs are often used for culinary purposes or sold to bakers. The eggs are tested with the large end up, so that the size of the air cell may be seen, as well as the condition of the embryo.

Testing should be done in a dark room. The infertile egg when held before the tester looks perfectly clear, much the same as a fresh egg, while a fertile egg shows a small dark spot—the embryo—with a network of little blood veins extending in all directions if the embryo is living, but if dead the blood settles away from the embryo toward the edge of the yolk, forming in most cases an irregular circle of blood known as a blood ring. The eggs containing strong, living embryos are dark and partly filled by the twenty-first day, and show a clear, distinct line of demarcation between the air cell and the growing embryo, while dead germs show only partial development and lack this clear, distinct outline.

BROODING.

Ducks are much easier to brood artificially than chickens, and artificial methods are used entirely on duck farms. If ducklings are raised under hens, it is advisable to confine the hens and allow the ducklings free range, as the hens are apt to wander too far away with their broods. After they have been confined to the incubator for from 24 to 36 hours after hatching, remove them to the brooder house (fig. 13) and give them their first feed. About 100 ducklings are placed in a pen 4 by 10 feet. A board across the pen allows the

ducklings to wander only 3 feet from brooder pipes during the first three days.

The temperature under the hover should be 95° F. for the first week, 85° the second week, and about 80° for the third week and until they are removed to the second brooder house, where the temperature under the hover is kept from 70° to 75° F. From the second brooder house they are driven to the cold brooder house without heat when about half grown—a little earlier in the warmer months and a little later in the colder months. The temperature at which to keep the hover depends on the section of the country and the weather conditions. About four weeks before marketing, the ducks are transferred to the fattening yards, which preferably extend into the water about 50 feet. About 300 ducks are placed in each yard, which is about 100 by 150 feet. Here they have a chance to swim and clean their plumage in the water until ready for market.

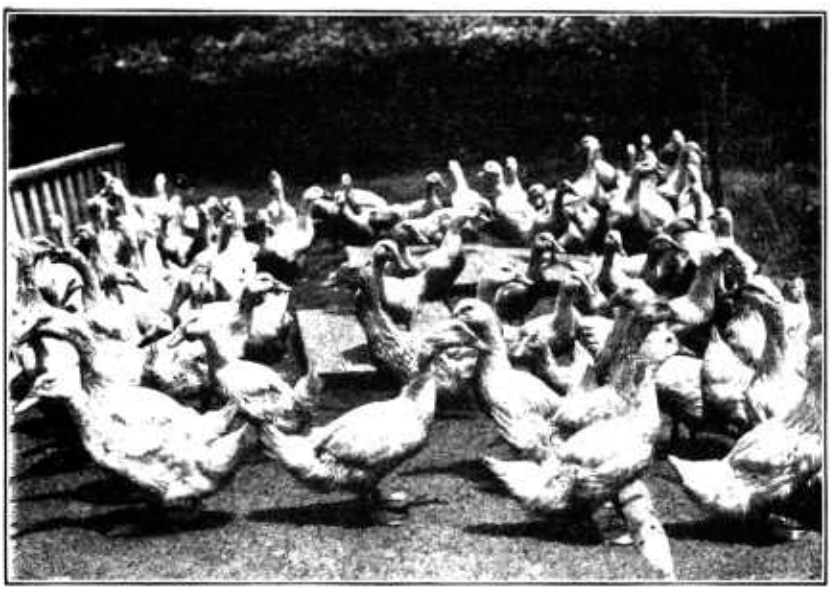

FIG. 14.—Pekin ducks about 7 weeks old in fattening pen.

METHODS OF FEEDING.

Ducklings which are to be sold as green ducks are kept in small pens and are fed heavily and forced for rapid growth. (Fig. 14.)

The ducks to be used for breeders are separated about July 1 from the growing ducks and kept in separate pens. Whole corn is fed to these breeders in the morning, giving what they will clean up in about an hour. In the evening a mash of 2 parts bran, 1 part middlings, 1 part corn meal by weight, and 20 per cent of green forage is fed. Breeding stock should be fed lightly until about October 1, when meat or fish scrap is gradually added to the ration. The meat or fish scrap is gradually increased to about 12 per cent by October 15, which is the maximum amount desirable in a laying ration for breeders. Another good ration for egg production for breeding

ducks consists of the following, the proportions being by measure, not weight: 1 part bran, 1 part low-grade flour, 1 part corn meal, 1 part green feed, ½ part meat scrap, ¼ part cooked fish. The breeding ducks should be fed twice daily—in the morning and at night. Green feed consists of creek grass, clover, young corn, rye, cowpeas, etc., cut up by machine in about one-half-inch lengths and mixed in the feed. Ground alfalfa may be used if no other green feed is available, using only about half as much ground alfalfa as of the fresh, green feeds. Rye is the first green feed in the spring, followed by oats, and then fodder corn in the summer. In August rape is sown and is available until freezing weather.

Breeding ducks are given all they will eat. The feed should be wet enough to hold together when squeezed, somewhere between sticky and crumbly, but it must not be crumbly. It is not advisable to feed entirely with fish and no meat scraps, as fresh fish is not always available and changing the ration is apt to cut down the egg yield. Cooked small potatoes are a desirable addition to the breeding ration during the winter months. Oyster shell and sand should be kept before the breeders all the time. Breeding ducks which are laying should be shut in the house about 4.30 p. m. and not released until about 10 o'clock the next morning, so that they will lay their eggs in the house. Indian Runner ducks are used to produce commercial eggs, so if kept for egg production they should be fed laying rations throughout the year.

FEEDING DUCKLINGS.

Ducklings should be allowed to range only about 2½ feet from the hover for the first three or four days, until they learn to run under the hover for heat. The pens should be bedded with straw. Water should be given them at each feeding time in protected fountains, arranged so as not to wet the straw or bedding. Brooder-house pens should be cleaned out about every 10 days and fresh straw added. The first week, feed five times daily, a moist mash of 2 parts bran, 1 part corn meal, 1 part middlings, and ½ part green feed. No grit is used in the feed except a little clean sand which can be sprinkled over the feed. Keep sand in a little box in each pen. Other good feeds to start young ducks on are soaked stale bread, shredded-wheat screenings, or commercial cracker crumbs, part of which could be used in this ration in place of the middlings. Feed about 5 per cent meat scrap in the mash from the seventh to the tenth days. After 10 days feed 2 parts bran (by weight), 1 part corn meal, 1 part middlings, 2 parts green feed, and 1 part meat scrap, or 1 part cooked fish, if obtainable, in place of meat scrap. Gradually increase the corn meal as the ducks grow older until the ration at 4 weeks is 2 parts bran, 2 parts corn meal, 2 parts middlings, 2½ parts cooked fish or 2 parts meat scrap, and 2 parts green feed. Feed this mash four times daily.

Ducks between 7 and 8 weeks of age are moved to the water front and fed a fattening ration, until marketed, of 4 parts corn meal, 2 parts bran, 2 parts meat scrap, 2 parts middlings, and 1 part green feed by weight. Keep the feed troughs near the water in the fattening pens to reduce exercise. Fish should be left out of the ration for market ducks four weeks before they are to be killed, so that no fishy

flavor may be given to the flesh. Feed should not be left before the ducks and allowed to sour, as it is apt to cause convulsions and death, especially among young ducklings. Ducklings and ducks are usually fed mash on flat feed boards rather than in troughs. The drinking water should be near the feed, so that the ducks can eat and drink at about the same time. Water fountains for ducks should be deep enough to allow the latter to get their bills into the water to wash sand or grit out of their nostrils. All mashes for ducks are fed moist. Green ducks are marketed at from 8 to 12 weeks of age, according to their condition and weight. Semisolid and dried buttermilk is being used in the feeding and fattening of ducks.

The loss in rearing ducklings under good conditions is usually from about 8 to 10 per cent, and both ducklings and breeding ducks are comparatively free from diseases if properly managed. The losses in growing ducks usually occur before the ducklings are 1 month

FIG. 15.—Open-shed shelter for fattening ducks.

old. Although ducks are comparatively free from diseases they are subject to the same diseases that affect chickens, and similar methods of treating diseases are used.

PREPARING DUCKS FOR MARKET.

At the New York market preference is given to ducks weighing about 5½ pounds, and no ducklings should be held after the long wing feathers have reached their full length, as the ducks reach their best condition at that time. The ducks are hung up by their feet in a row and a weighted hook is caught through the nostrils to facilitate bleeding. The ducks are stuck in the roof of the mouth or through the throat, cutting the artery with a knife which has a narrow blade about 4 inches long, and stunned by piercing the brain, turning the knife slightly. The blood is saved and mixed in the mash for the growing ducks. The ducks may be either scalded or dry picked, scalding being the most common method and the method used exclusively for the New York market. The water for scalding should be just below boiling, as too hot water discolors the flesh; the ducks

should be scalded just as soon as they are through bleeding. The long tail feathers are left on the ducks, the wings are picked to the first joint, and the neck halfway to the head. Long pinfeathers usually are removed with a dull knife, and the down sometimes is rubbed off with the moistened hand, or it may be burned with alcohol or shaved with a very sharp knife. Large duck farms usually have pickers who devote their time entirely to the dressing of ducks during the marketing season and are very proficient in the work. The average duck picker picks about 40 ducks in half a day.

After the ducks are picked they are usually washed and put into ice water for an hour or two to cool and plump. Each layer of ducks is packed flat in ice, in barrels, usually with the keels or breasts down. A layer of crushed ice is placed on the bottom of the barrel on which is put a layer of dressed ducks, and alternate layers of ducks and ice are added until the barrel is nearly full. The top of the barrel is filled with a layer or header of ice. Boxes holding 12 dry-packed ducks are also used in a few cases. These dressed ducks should be graded according to their size and thoroughly chilled before they are packed in barrels or boxes. It costs from 5 to 6 cents apiece to pick ducks, but the feathers almost pay for the picking. Each duck yields about 2 ounces of marketable feathers. The feathers must be dried by spreading them out in thin layers in the loft, and they should be turned several times until they are thoroughly dried. Then they are sold to feather dealers and shipped in large burlap sacks. The large duck farms figure on marketing from 40 to 45 ducks for each breeder.

Green ducks are marketed from April to November and bring from 20 to 45 cents a pound when sold at wholesale to commission men. The highest prices are paid for the ducks marketed early in the spring and they decrease as the season advances and the supply becomes more abundant. The demand for green ducks has been built up in large cities in the East and on the Pacific coast, and there is very little demand for such ducks in small cities and towns. Many farmers market their ducks in the fall as spring ducks at a lower price per bird than is received for green ducks in the spring.

MARKETING DUCKS' EGGS.

The demand for ducks' eggs at a good price is limited and not nearly so general as the demand for hens' eggs. A good demand for ducks' eggs exists about Easter time at prices usually several cents a dozen higher than for hens' eggs, but during the rest of the year the average price for ducks' eggs has been about the same as for hens' eggs. Since three ducks' eggs weigh about the same as four hens' eggs, ducks do not appear to be so profitable for the production of market eggs as hens. A trade is gradually being established in some markets for fancy near-by ducks' eggs, which bring higher prices than hens' eggs, and the demand seems to be increasing. Pure-white eggs are preferred and usually bring the highest price. These eggs should be marketed frequently, as they depreciate in quality more rapidly than hens' eggs, especially during hot weather. The market for eggs should be carefully investigated by those who intend to raise breeds of the egg-laying type of ducks, such as the Indian Runner.

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